Fiscal Impact Statement

Associated with the

Notice of Intended Action

Group #1 - Water Quality Standards
(Chapter 61)

Prepared by the

Department of Natural Resources

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Fiscal Impact Statement

Introduction: This Fiscal Impact Statement (FIS) provides the projected costs and potential benefits associated with the proposed rule changes being addressed in the Notice of Intended Action, Group #1 – Water Quality Standards (Chapter 61). This rule-making effort is the most recent effort of the triennial review of Iowa's Water Quality Standards and is a part of the IDNR's Time Lines for Water Quality Standards Modifications that includes the following topics:

1. Amend the definition for general use stream segments to eliminate the language that allows streams that flow as a result of discharges from wastewater treatment facilities to be considered as general use segments and the language that states aquatic life will be protected from acutely toxic conditions only at elevated flows
2. Amend the current warm water aquatic life use designations to the following designations: Class B(WW-1), Class B(WW-2), and Class B(WW-3). The existing Class B(WW) and Class B(LR) waterbodies will be reassigned to Class B(WW-1) and Class B(WW-2), respectively
3. Eliminate the protected flow provision in 567 – 61.2(5) and rule–referenced document "Protected Flows for Selected Stream Segments"
4. Designate all perennial rivers and streams or intermittent streams with perennial pools in Iowa not specifically listed in the Surface Water Classification as Class B(WW-1) waters.
5. Designate as Class A1 – Primary Contact Recreational Use all of Iowa's perennial rivers and streams and intermittent streams with perennial pools.

This evaluation will discuss the fiscal impacts from each of the five topics separately and provide a summary of the fiscal impacts for the entire rule-making effort. It is important to note that department staff did not evaluate the specific individual impacts or treatment needs for each wastewater treatment facility noted in the FIS. Basic assumptions and evaluations were made on the general impacts on all facilities predicted to be affected. The specific individual impacts and needs will be best evaluated by the facility's staff or retained consultant. Innovative or unique treatment methods may be available to some facilities thereby reducing specific costs.

The number of facilities expected to be impacted is an approximation based on the NPDES permitted facilities list that is periodically updated as NPDES permits are issued for new treatment systems or revoked for others. The impacted facilities list is based off the February 2004 List of NPDES permitted facilities that can be found on the department's website at http://www.iowadnr.com/water/npdes/index.html.

Topic 1 – General Use Definition: This topic is proposing to revise the current definition for general use stream segments in 567 – 61.3(1)a. The language that states general use stream segments that flow as a result of discharges from wastewater treatment facilities to be considered as general use segments is proposed to be eliminated as the presence of flow or pools supporting a designated use must stand alone regardless of the source of that flow or pooling. In addition, Topic 4, below, proposes to add the Class A-1 and Class B(WW-1) to all non-designated perennial or perennial-pooled waters, which would include the stream segments resulting from the wastewater dischargers. It is anticipated that these general use streams where wastewater treatment facilities discharge will be designated as Class B(WW-1) streams. Thus, the potentially affected facilities and associated implementation cost will be included in Topic 4, below.

Anticipated Benefits. The anticipated benefits from revising the general use definition are associated with the potential improvements to: instream conditions for aquatic and semiaquatic life,

wildlife and livestock watering needs, and aesthetic conditions. None of these potential benefits has a readily identifiable monetary value and will not be estimated in this impact statement. With the interconnection between the proposed elimination of the wastewater exclusion of Topic 1 and the proposed application of the rebuttable presumption of Topic 4, common anticipated benefits would not only be to the streams currently receiving wastewater treatment plant discharges, but also waters receiving any future discharge of wastewater. The benefits in the nature of projected improvements to instream water quality below wastewater treatment discharges would be derived from the construction of the treatment improvements to comply with the acute and chronic numerical criteria in the Water Quality Standards.

Topic 2 – Class B Use Designations and Warm Water Protocol: This topic is proposing to amend the current warm water aquatic life use designations to the following designations: Class B(WW-1), Class B(WW-2), and Class B(WW-3). The existing Class B(WW) and Class B(LR) waterbodies will be reassigned to Class B(WW-1) and Class B(WW-2), respectively. This rule proposal is accompanied by the Warm Water Use Assessment and Attainability Analysis Protocol that proposes an approach to be followed in assessing the warm water aquatic life uses of streams.

These proposed revisions will have no direct economic impact. However, if a currently general use classified stream segment is assessed in the future using the protocol and determined to more appropriately be one of the Class B use designations, then any wastewater treatment facility located on that stream (or activity impacting the attainment of the use) may be impacted. This impact will be through the added level of protection for aquatic life provided through the applicable Class B designation. Wastewater treatment facilities discharging treated effluent to these streams would be required to meet more stringent limits, particularly for ammonia nitrogen. Other sources (e.g. nonpoint sources, other point sources) that may be affecting the designated use may be required to modify the impacting activity. The impact will not be known until the specific stream reach is appropriately field assessed in the future. However, it is anticipated that all suspected general use streams potentially supporting aquatic life will become Class B designated due to the proposed rule modification of Topic 4 – Rebuttable Presumption, below.

Topic 3 – Eliminate Protected Flow: This topic is proposing to eliminate the rule–referenced document “Protected Flows for Selected Stream Segments” and the protected flow provisions provided in Chapter 567 - 61.2(5). The elimination of the protected flow provision would reduce the low stream flow value at which the numerical criteria would apply. The low stream flow value affects the allowed amount or concentration of key materials that could be assimilated in the designated stream reach. Thus, for wastewater treatment facilities, this would reduce the amount of treated pollutants, such as ammonia nitrogen, that would be allowed in their discharge and result in the need to provide additional treatment of key parameters, particularly ammonia nitrogen.

A. Impacted Facilities: It is projected that three groups of wastewater treatment facilities could be impacted by the proposed rule change to eliminate the protected flow concept:

1. municipal wastewater treatment facilities discharging directly to streams segments with an assigned protected flow,
2. industrial wastewater treatment facilities discharging directly to streams segments with an assigned protected flow, and
3. semi-public wastewater treatment facilities discharging directly to streams segments with an assigned protected flow.

For this topic 63 wastewater treatment facilities (54 municipal, 6 semi-public, 3 industrial) statewide are anticipated to be impacted through the implementation of more stringent effluent ammonia-nitrogen limits. (It is important to note that these 63 facilities are not included in the affected facilities noted in Topic 1 – General Use Definition or Topic 4 – Rebuttable Presumption). However, the 63 facilities will also have more stringent bacteria limits due to the proposed provisions adding Class A-1 to all Class B(LR) streams (Topic 5). The disinfection/dechlorination costs are included in Topic 5 summary impacts below.

Facilities that do not possess significant ammonia-nitrogen concentrations in their wastewater will not likely be affected by this topic.

B. Projected Costs: With the protected flow provision being proposed for elimination, it is anticipated that these designated streams will possess critical stream low flows ($1Q_{10}$ & $30Q_{10}$) of 0.0 cfs. Little assimilative capacity will be available in the stream for mixing that would provide for more relaxed ammonia-nitrogen effluent limitations. Achieving compliance for these 60 facilities would require an advanced ammonia-nitrogen removal treatment process similar to an extended aeration activated sludge wastewater treatment facility because conventional secondary wastewater treatment units do not typically remove ammonia-nitrogen in amounts that will meet end-of-pipe ammonia-nitrogen water quality-based effluent limits.

The types of facilities that achieve compliance with these more stringent ammonia nitrogen limits include oxidation ditch-type and other various designs of extended aeration activated sludge wastewater treatment processes. These processes are costly to build and operate. Aerated lagoon and trickling filter facilities will most likely have to upgrade to these types of facilities to meet to the more stringent effluent ammonia limits. It was assumed that any facility currently using an activated sludge process to treat wastewater may need to upgrade as well or possibly change its current operation to provide for extended aeration to remove ammonia-nitrogen. This could result in higher operation and maintenance costs and a reduction in design capacity of the existing facility since it will take longer to treat the current wasteload to the treatment facility.

The fiscal impact assessment has attempted to establish a range of costs that considers both higher cost and lower cost scenarios. The established range incorporates conservative approaches to estimating the potential fiscal impact. It is understood that a multitude of factors or variables may result in fiscal impacts that are either below the lower cost estimates or exceed the higher cost estimates. One of these variables is the implementation of alternative treatment technologies.

The Department has assembled an addendum to this document that discusses implementation alternatives that may offer lesser-cost options than the traditional nitrification processes. Projected unit cost or relative cost reductions and potential user groups are noted in the addendum discussions. It is recognized that the alternatives are not applicable to all facilities and have not been included in the cost estimates.

It must be noted that in addition to implementation alternatives, other factors and variables (e.g., the potential for a site-specific removal of a use designation) exist but were not incorporated into the calculation of these cost estimates due to the difficulty of predicting the number of facilities at which the other factors and variables could apply.

Higher Cost Scenario: The higher cost approach considers the need for construction of ammonia-nitrogen removal treatment units (nitrification) at all impacted facilities noted in the above three

groups. This assumes that all continuously discharging wastewater treatment facilities treating domestic wastewater or industrial wastewater treatment facilities with elevated ammonia nitrogen levels would be required to replace or modify their existing treatment units to achieve near-complete removal of ammonia nitrogen.

For wastewater treatment facilities with existing aerated lagoon units, it is assumed that the existing treatment units would be replaced and a new mechanical nitrification treatment facility constructed. As noted above, several implementation alternatives discussed in the attached addendum may provide a lesser-cost option for some wastewater treatment facilities. However, the appropriateness of any of these alterative options is best left to the facility's managing authority.

The cost projections also considered increased operation and maintenance (O&M) costs for existing aerated lagoon and trickling filter treatment units. It is assumed that the facility's managing authority would experience an increase in O&M costs with the new nitrification units compared to the existing treatment units which typically cost less to operate.

It is also assumed that an existing facility with a complex mechanical systems facilities would expect to have similar O&M costs as an extended air activated sludge wastewater treatment plant. Therefore, no O&M costs were calculated for these facilities.

See Table 1 for the listing of impacted facilities associated with the higher cost scenario for this topic and the total estimated capital construction cost, total present worth O&M cost, and total annual cost. It is important to note that the estimated cost did not consider the current costs that would be associated with the wastewater treatment facility's existing units. While these existing costs could be an item considered in a comprehensive economic impact assessment, they have not been included in this assessment. Insufficient data, resources, and time occur with the rulemaking effort to accurately consider existing unit costs. It is anticipated that the existing costs are relatively small and best considered by each facility's managing authority.

Lower Cost Scenario: The lower cost scenario assumes that existing complex mechanical systems (non-aerated lagoon and non-trickling filter units) can achieve compliance with more stringent ammonia-nitrogen limits (or achieve nitrification) with their existing treatment units through optimum operation of their biological and physical treatment units. Through optimum operation, it is assumed that no capital cost of upgrading their treatment plants would occur. However, it is recognized that a minor increase in operational cost (varying between facilities) would be expected, but cannot be quantified by this assessment effort.

Thus, Table 1 also notes the lower cost estimated costs for the impacted facilities associated with Topic 3 and only differs from the higher cost projections by excluding the capital construction costs for the 27 existing complex mechanical system (non-aerated lagoon and non-trickling filter units).

Table 1 – Topic 3 Fiscal Impact

Facility Name	Facility Type	Type of Treatment
AG PROCESSING INC a COOPERATIVE	INDUSTRIAL	ACTIVATED SLUDGE
CARGILL INC. EDDYVILLE INDUSTRIAL	INDUSTRIAL	AERATED LAGOON
IOWA ARMY AMMUNITION PLANT	INDUSTRIAL	TRICKLING FILTER
WEST LIBERTY CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
DIKE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE

ELK RUN HEIGHTS CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
SHELLSBURG CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
VINTON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
BOONE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
GRIMES CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
ANKENY CITY OF STP (EAST)	MUNICIPAL	ACTIVATED SLUDGE
CASEY CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
INDIANOLA CITY OF STP (NORTH)	MUNICIPAL	ACTIVATED SLUDGE
RUNNELLS CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
CORNING CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
VICTOR CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
WILLIAMSBURG CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
WORTHINGTON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
CARROLL CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
WHEATLAND CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
CORWITH CITY OF STP	MUNICIPAL	AERATED LAGOON
DENVER CITY OF STP	MUNICIPAL	AERATED LAGOON
BLAIRSTOWN CITY OF STP	MUNICIPAL	AERATED LAGOON
BRANDON CITY OF STP	MUNICIPAL	AERATED LAGOON
NORWAY CITY OF STP	MUNICIPAL	AERATED LAGOON
GRANGER CITY OF STP	MUNICIPAL	AERATED LAGOON
BEACON CITY OF STP	MUNICIPAL	AERATED LAGOON
ARMSTRONG CITY OF STP	MUNICIPAL	AERATED LAGOON
BROOKLYN CITY OF STP	MUNICIPAL	AERATED LAGOON
ELY CITY OF STP	MUNICIPAL	AERATED LAGOON
LADORA CITY OF STP	MUNICIPAL	AERATED LAGOON
TOLEDO CITY OF STP	MUNICIPAL	AERATED LAGOON
HILLS CITY OF STP	MUNICIPAL	AERATED LAGOON
PAULLINA CITY OF STP	MUNICIPAL	AERATED LAGOON
CAMBRIDGE CITY OF STP	MUNICIPAL	AERATED LAGOON
MOUNT PLEASANT CITY OF STP (EAST)	MUNICIPAL	AERATED LAGOON
LIME SPRINGS CITY OF STP	MUNICIPAL	AERATED LAGOON
KINGSLEY CITY OF STP	MUNICIPAL	AERATED LAGOON
MOVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
RINARD CITY OF STP	MUNICIPAL	OTHER
FAIRFIELD CITY OF STP	MUNICIPAL	OXIDATION DITCH
SUMNER CITY OF STP	MUNICIPAL	OXIDATION DITCH
CONRAD CITY OF STP	MUNICIPAL	SBR
GRUNDY CENTER CITY OF STP	MUNICIPAL	SBR
STORY CITY CITY OF STP	MUNICIPAL	SBR
DURANT CITY OF STP	MUNICIPAL	TRICKLING FILTER
WILTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
WINTERSET CITY OF STP	MUNICIPAL	TRICKLING FILTER
BEDFORD CITY OF STP	MUNICIPAL	TRICKLING FILTER
VILLISCA CITY OF STP	MUNICIPAL	TRICKLING FILTER
Ames Water Pollution Control Facility	MUNICIPAL	TRICKLING FILTER
COLFAX CITY OF STP	MUNICIPAL	TRICKLING FILTER
NEVADA CITY OF STP	MUNICIPAL	TRICKLING FILTER
WASHINGTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
LOWDEN CITY OF STP	MUNICIPAL	TRICKLING FILTER
HAMPTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
MANNING CITY OF STP	MUNICIPAL	TRICKLING FILTER
NORTH POLK SCHOOL COMMUNITY SCHOOL	SEMI-PUBLIC	ACTIVATED SLUDGE
PLANTATION VILLAGE MHP STP	SEMI-PUBLIC	ACTIVATED SLUDGE
MT. JOY MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
SOUTH SQUAW VALLEY ASSOCIATION	SEMI-PUBLIC	ACTIVATED SLUDGE
GREEN VALLEY MOBILE HOME COURT	SEMI-PUBLIC	OTHER
LOST CANYON MOBILE HOME PARK	SEMI-PUBLIC	TRICKLING FILTER

	Lower Cost Scenario			Higher Cost Scenario		
	Capital Cost of Construction	O & M Cost Present Worth	20-year Annual Cost	Capital Cost of Construction	O & M Cost Present Worth	20-year Annual Cost
	$53,478,000	$80,533,000	$9,009,000	$97,413,000	$80,533,000	$11,960,000
Overall Cost			$134,011,000			$177,946,000

C. Anticipated Benefits:
The anticipated benefits from eliminating protected flow are associated with the potential improvements to: instream conditions for aquatic and semiaquatic life, wildlife and livestock watering needs, and aesthetic conditions. None of these potential benefits has a readily identifiable monetary value and thus will not be estimated in this impact statement.

Topic 4 – Rebuttable Presumption: This topic is proposing to designate all perennial rivers and streams or intermittent streams with perennial pools in Iowa as Class A1 and all of the same streams not specifically listed in the Surface Water Classification as Class B(WW-1) waters, and will protect these waters for recreational and aquatic life uses. The adoption of this provision would add approximately 10,000 to 14,000 miles of streams as designated streams, including stream segments downstream of all continuously discharging wastewater treatment facilities. By this designation, the numerical criteria associated with both of these designations would apply at all specified stream flow regimes, including the critical stream low flows ($1Q_{10}$, $7Q_{10}$, and $30Q_{10}$). Since most of these stream segments will have critical low flows of zero cfs, this implies that the allowed amount or concentration of key materials that could be assimilated in the designated stream reach would be very near or equal to the numerical criteria. Thus, for wastewater treatment facilities, this would reduce the amount of treated pollutants, such as ammonia nitrogen, that would be allowed in their discharge and result in the need to provide additional treatment of key parameters, particularly ammonia nitrogen and bacteria.

It should be noted that the fiscal impact estimates are not solely based on designating all perennial rivers and streams or intermittent streams with perennial pools in Iowa as Class A1 and all of the same streams not specifically listed in the Surface Water Classification as Class B(WW-1) waters. The estimates also consider the results of the Use Assessments/Use Attainability Analyses (UA/UAA) that will be conducted on these waters to determine the most appropriate use designation. However, the FIS is anticipating that some form of Class B aquatic life use designation and Class A recreational use will remain for most of these streams after these UA/UAAs are complete. The impact of this proposed rule is realized through establishing the appropriate aquatic life and recreational use designations for Iowa's perennial rivers and streams or intermittent streams with perennial pools based on guidance from EPA, not necessarily the establishment of a rebuttable presumption of uses for Iowa's waters.

A. Impacted Facilities: Statewide, 334 wastewater treatment facilities (210 municipal, 114 semi-public, 10 industrial) are anticipated to be impacted through the implementation of more stringent effluent ammonia-nitrogen and bacteria limits. The treated effluent from these continuously discharging facilities currently enter General Use (non-designated) watercourses ranging from channelized ditches to meandering waterways. All of these watercourses were found not to meet the current definitions for designated uses. Under the proposed rule change, all would become designated as Class A1 and Class B(WW-1) waters.

It should be noted that some facilities do not possess significant ammonia-nitrogen concentrations in their wastewater and may not be affected by this new rule. However, there could be other parameters that may be water quality-limited. These non-traditional water quality-limited parameters could include toxics, toxic metals, or dissolved solids for which facility specific treatment techniques may be required. No economic projections are made of the non-traditional water quality-limited parameters.

B. Projected Costs: With the proposed designation of stream segments under the rebuttable presumption provision, it is anticipated that these designated streams will possess critical stream low flows ($1Q_{10}$, $7Q_{10}$, and $30Q_{10}$) of 0.0 cfs. Therefore, little assimilative capacity will be available in the stream for mixing that would provide for more relaxed ammonia-nitrogen effluent limitations or for meeting bacteria limits.

Nitrification Costs: Achieving compliance for these 334 facilities would require a nitrification treatment process similar to an extended aeration activated sludge wastewater treatment facility because, as discussed in Topic 3, conventional secondary wastewater treatment units will not be able to meet end-of-pipe ammonia-nitrogen water quality-based effluent limits. The nitrification units may include oxidation ditch-type and other various designs of extended aeration activated sludge wastewater treatment processes that are costly to build and operate. It is assumed that aerated lagoon and trickling filter facilities will upgrade to these types of nitrification facilities to comply with anticipated ammonia limits. In addition, it is assumed that any activated sludge facility may need to upgrade or possibly change its current operation to provide for extended aeration to remove ammonia-nitrogen, resulting in higher operation and maintenance costs and possibly reduced design capacity.

For Topic 4, the fiscal impact assessment has attempted to establish a range of costs that considers both higher cost and lower cost scenarios. The established range incorporates conservative approaches to estimating the potential fiscal impact. As noted in the discussion under Topic 3, it is understood that a multitude of factors or variables may result in estimates that are either below the lower cost estimates or exceed the higher cost estimates and were not considered due to the difficulty of predicting which variables could apply to any facility. Some of these factors will not be known until fieldwork is completed through the Warm Water Use Assessment and Attainability Analysis Protocol.

1) Higher Cost Scenario – Nitrification: The higher cost approach assumes the need for construction of nitrification units at all 334 impacted facilities. This assumes that all continuously discharging wastewater treatment facilities treating domestic wastewater or industrial wastewater treatment facilities with elevated ammonia nitrogen levels would be required to replace or modify their existing treatment units with nitrification unit processes. For wastewater treatment facilities with existing aerated lagoon units, it is assumed that the existing treatment units would be replaced and a new mechanical nitrification treatment facility would be constructed.

Similar to Topic 3, the cost projections also consider increased O&M costs for existing aerated lagoon and trickling filter treatment units. It is assumed that the facility would experience an increase in O&M costs with the new nitrification units compared to the existing treatment units which typically cost less to operate. It is also assumed that existing complex mechanical systems facilities would have similar O&M costs as an extended air activated sludge wastewater treatment plant. Therefore, no O&M costs were included for these facilities.

See Table 3 for the listing of impacted facilities associated with the higher cost scenario and the total estimated capital construction cost, total present worth O&M cost, and total annual cost. It is important to note that the estimated costs do not consider the current costs that would be associated with the wastewater treatment facility's existing units.

2) Lower Cost Scenario - Nitrification: Similar to Topic 3, the lower cost scenario assumes that existing complex mechanical systems (non-aerated lagoon and non-trickling filter units) would be able to achieve nitrification with their existing treatment units through optimum operation. Thus, it was assumed that no capital cost for treatment unit upgrade would occur. However, it is recognized that a minor increase in operational cost would be expected, but is not quantified in this assessment.

Table 2 notes the lower cost estimated costs for the impacted facilities associated with Topic 4 and only differs from the higher cost projections by excluding the capital construction costs for the 88 existing complex mechanical systems for municipal, semi-public and select industrial facilities.

Table 2 – Topic 4 Nitrification Fiscal Impact

Facility Name	Facility Type	Type of Treatment
MICHAEL FOODS, INC.	INDUSTRIAL	ACTIVATED SLUDGE
TYSON FRESH MEATS, INC. - STORM LAKE	INDUSTRIAL	ACTIVATED SLUDGE
CONAGRA DAIRY FOODS COMPANY	INDUSTRIAL	ACTIVATED SLUDGE
AGRIPROCESSORS, INC.	INDUSTRIAL	ACTIVATED SLUDGE
HWH CORPORATION	INDUSTRIAL	AERATED LAGOON
ASSOCIATED MILK PRODUCERS, INC.	INDUSTRIAL	AERATED LAGOON
ROSE ACRE FARMS, INC. GUTHRIE CENTER EGG FARM	INDUSTRIAL	AERATED LAGOON
GOLDEN OVAL EGGS COOPERATIVE	INDUSTRIAL	AERATED LAGOON
SIOUX PREME PACKING COMPANY*	INDUSTRIAL	LAND APPLICATION
CARGILL INC. EDDYVILLE LEACHATE TREATMENT PLANT	INDUSTRIAL	OTHER
OSAGE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
ATALISSA CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
LISBON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
MOUNT VERNON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
JESUP, CITY OF STP (SOUTHEAST)	MUNICIPAL	ACTIVATED SLUDGE
VAN HORNE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
POCAHONTAS CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
OSKALOOSA CITY OF STP (SOUTHWEST)	MUNICIPAL	ACTIVATED SLUDGE
PELLA CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
WEST BURLINGTON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
SANBORN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
MOUNT AYR CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
BELLE PLAINE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
SWISHER CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
IOWA CITY CITY OF STP (SOUTH)	MUNICIPAL	ACTIVATED SLUDGE
TIFFIN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
WELLMAN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
DYERSVILLE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
SPRAGUEVILLE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
GLIDDEN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
MILES CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
STORM LAKE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE

WAUKEE CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
SULLY CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
NEWTON CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
MONONA CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
CRESCO CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
ELMA CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
OELWEIN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
READLYN CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
INWOOD CITY OF STP	MUNICIPAL	AERATED LAGOON
CLARION CITY OF STP	MUNICIPAL	AERATED LAGOON
STANWOOD CITY OF STP	MUNICIPAL	AERATED LAGOON
TIPTON CITY OF STP (EAST)	MUNICIPAL	AERATED LAGOON
WALCOTT CITY OF STP (NORTH)	MUNICIPAL	AERATED LAGOON
WALCOTT CITY OF STP (SOUTH)	MUNICIPAL	AERATED LAGOON
WEST BRANCH CITY OF STP	MUNICIPAL	AERATED LAGOON
ATKINS CITY OF STP	MUNICIPAL	AERATED LAGOON
CENTER POINT CITY OF STP (NORTH)	MUNICIPAL	AERATED LAGOON
CENTER POINT, CITY OF STP (SOUTH)	MUNICIPAL	AERATED LAGOON
JESUP, CITY OF STP (SOUTH)	MUNICIPAL	AERATED LAGOON
KEYSTONE CITY OF STP	MUNICIPAL	AERATED LAGOON
NEWHALL CITY OF STP	MUNICIPAL	AERATED LAGOON
TRAER MUNICIPAL UTILIES	MUNICIPAL	AERATED LAGOON
URBANA CITY OF STP	MUNICIPAL	AERATED LAGOON
WELLSBURG CITY OF STP	MUNICIPAL	AERATED LAGOON
ACKLEY CITY OF STP	MUNICIPAL	AERATED LAGOON
CINCINNATI CITY OF STP	MUNICIPAL	AERATED LAGOON
CORYDON CITY OF STP	MUNICIPAL	AERATED LAGOON
HUMESTON CITY OF STP	MUNICIPAL	AERATED LAGOON
RUSSELL CITY OF STP	MUNICIPAL	AERATED LAGOON
DESOTO CITY OF STP	MUNICIPAL	AERATED LAGOON
POLK CITY, CITY OF STP	MUNICIPAL	AERATED LAGOON
SAVAGE SANITARY DISTRICT STP	MUNICIPAL	AERATED LAGOON
SLATER CITY OF STP	MUNICIPAL	AERATED LAGOON
WOODWARD CITY OF STP	MUNICIPAL	AERATED LAGOON
BONDURANT CITY OF STP	MUNICIPAL	AERATED LAGOON
HARTFORD CITY OF STP	MUNICIPAL	AERATED LAGOON
MILO CITY OF STP	MUNICIPAL	AERATED LAGOON
MITCHELLVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
NEW VIRGINIA SANITARY DISTRICT-STP	MUNICIPAL	AERATED LAGOON
NORWALK CITY OF STP	MUNICIPAL	AERATED LAGOON
PLEASANTVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
PRAIRIE CITY, CITY OF STP	MUNICIPAL	AERATED LAGOON
ST. CHARLES CITY OF STP	MUNICIPAL	AERATED LAGOON
TRURO CITY OF STP	MUNICIPAL	AERATED LAGOON
DONNELLSON CITY OF STP	MUNICIPAL	AERATED LAGOON
EDDYVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
LOVILIA CITY OF STP	MUNICIPAL	AERATED LAGOON
MELCHER-DALLAS CITY OF STP	MUNICIPAL	AERATED LAGOON
ALBIA CITY OF STP (NORTH)	MUNICIPAL	AERATED LAGOON
ALBIA CITY OF STP (WEST)	MUNICIPAL	AERATED LAGOON
ANITA CITY OF STP	MUNICIPAL	AERATED LAGOON
KIMBALLTON CITY OF STP	MUNICIPAL	AERATED LAGOON
MIDDLETOWN CITY OF STP	MUNICIPAL	AERATED LAGOON
HOSPERS CITY OF STP	MUNICIPAL	AERATED LAGOON
REMSEN CITY OF STP	MUNICIPAL	AERATED LAGOON
ORANGE CITY CITY OF STP	MUNICIPAL	AERATED LAGOON
BLOOMFIELD CITY OF STP (MAIN)	MUNICIPAL	AERATED LAGOON
LENOX CITY OF STP	MUNICIPAL	AERATED LAGOON

GARNER CITY OF STP	MUNICIPAL	AERATED LAGOON
KLEMME CITY OF STP	MUNICIPAL	AERATED LAGOON
WILLIAMS CITY OF STP	MUNICIPAL	AERATED LAGOON
CHELSEA CITY OF STP	MUNICIPAL	AERATED LAGOON
DYSART CITY OF STP	MUNICIPAL	AERATED LAGOON
GILMAN CITY OF STP	MUNICIPAL	AERATED LAGOON
HOMESTEAD SANITARY DISTRICT	MUNICIPAL	AERATED LAGOON
LAUREL CITY OF STP	MUNICIPAL	AERATED LAGOON
MACBRIDE SANITARY SEWER DISTRICT	MUNICIPAL	AERATED LAGOON
MONTOUR CITY OF STP	MUNICIPAL	AERATED LAGOON
STATE CENTER CITY OF STP	MUNICIPAL	AERATED LAGOON
WALFORD CITY OF STP	MUNICIPAL	AERATED LAGOON
ALBION CITY OF STP	MUNICIPAL	AERATED LAGOON
WEST/HIGH AMANA SANITARY DISTRICT	MUNICIPAL	AERATED LAGOON
LONE TREE CITY OF STP (SOUTH)	MUNICIPAL	AERATED LAGOON
MORNING SUN CITY OF STP	MUNICIPAL	AERATED LAGOON
ASBURY CITY OF STP	MUNICIPAL	AERATED LAGOON
ODEBOLT CITY OF STP	MUNICIPAL	AERATED LAGOON
EDGEWOOD CITY OF STP	MUNICIPAL	AERATED LAGOON
EPWORTH CITY OF STP	MUNICIPAL	AERATED LAGOON
PRESTON CITY OF STP	MUNICIPAL	AERATED LAGOON
ALLERTON CITY OF STP (SOUTH)	MUNICIPAL	AERATED LAGOON
BLUE GRASS CITY OF STP	MUNICIPAL	AERATED LAGOON
MONTPELIER SANITARY DISTRICT, VILLAGE OF	MUNICIPAL	AERATED LAGOON
FORT MADISON CITY OF STP (WESTERLY)	MUNICIPAL	AERATED LAGOON
WEST POINT CITY OF STP	MUNICIPAL	AERATED LAGOON
FONTANELLE CITY OF STP	MUNICIPAL	AERATED LAGOON
MASSENA CITY OF STP	MUNICIPAL	AERATED LAGOON
DALLAS CENTER CITY OF STP	MUNICIPAL	AERATED LAGOON
FARNHAMVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
DELTA CITY OF STP	MUNICIPAL	AERATED LAGOON
MONTEZUMA CITY OF STP	MUNICIPAL	AERATED LAGOON
NEW SHARON CITY OF STP	MUNICIPAL	AERATED LAGOON
SIGOURNEY CITY OF STP (EAST)	MUNICIPAL	AERATED LAGOON
WHAT CHEER CITY OF STP	MUNICIPAL	AERATED LAGOON
EARLING CITY OF STP	MUNICIPAL	AERATED LAGOON
SIBLEY CITY OF STP	MUNICIPAL	AERATED LAGOON
HULL CITY OF STP	MUNICIPAL	AERATED LAGOON
BAXTER CITY OF STP	MUNICIPAL	AERATED LAGOON
ELKHART CITY OF STP	MUNICIPAL	AERATED LAGOON
HEDRICK CITY OF STP	MUNICIPAL	AERATED LAGOON
MAXWELL CITY OF STP	MUNICIPAL	AERATED LAGOON
MONROE CITY OF STP (EAST)	MUNICIPAL	AERATED LAGOON
ROLAND CITY OF STP	MUNICIPAL	AERATED LAGOON
BIRMINGHAM CITY OF STP	MUNICIPAL	AERATED LAGOON
BRIGHTON CITY OF STP	MUNICIPAL	AERATED LAGOON
KEOTA CITY OF STP	MUNICIPAL	AERATED LAGOON
NEW LONDON CITY OF STP	MUNICIPAL	AERATED LAGOON
WAYLAND CITY OF STP	MUNICIPAL	AERATED LAGOON
WINFIELD CITY OF STP	MUNICIPAL	AERATED LAGOON
AGENCY CITY OF STP	MUNICIPAL	AERATED LAGOON
MONDAMIN CITY OF STP*	MUNICIPAL	AERATED LAGOON
SCHLESWIG CITY OF STP	MUNICIPAL	AERATED LAGOON
DAVIS CITY CITY OF STP	MUNICIPAL	AERATED LAGOON
LEON CITY OF STP	MUNICIPAL	AERATED LAGOON
CALMAR CITY OF STP	MUNICIPAL	AERATED LAGOON
GARNAVILLO CITY OF STP	MUNICIPAL	AERATED LAGOON
OSSIAN CITY OF STP	MUNICIPAL	AERATED LAGOON

FAIRBANK CITY OF STP	MUNICIPAL	AERATED LAGOON
WINTHROP CITY OF STP	MUNICIPAL	AERATED LAGOON
ELDRIDGE CITY OF STP(BUTTRMLK)	MUNICIPAL	AERATED LAGOON
MECHANICSVILLE CITY OF STP	MUNICIPAL	AERATED LAGOON
PARK VIEW SANITARY DIST. STP	MUNICIPAL	AERATED LAGOON
TREYNOR CITY OF STP (NORTHWEST)	MUNICIPAL	AERATED LAGOON
WALNUT CITY OF STP	MUNICIPAL	AERATED LAGOON
LAKE MILLS CITY OF STP	MUNICIPAL	AERATED LAGOON
MOUNT STERLING, CITY OF-STP	MUNICIPAL	OTHER
LEGRAND CITY OF STP	MUNICIPAL	OTHER
LAKE PARK CITY OF STP*	MUNICIPAL	OTHER
FESTINA-(WINNESHIEK COUNTY-STP	MUNICIPAL	OTHER
RANDALIA CITY OF STP	MUNICIPAL	OTHER
TORONTO, CITY OF-STP	MUNICIPAL	OTHER
CHARITON CITY OF STP	MUNICIPAL	OXIDATION DITCH
AUDUBON CITY OF STP	MUNICIPAL	OXIDATION DITCH
SOLON CITY OF STP	MUNICIPAL	OXIDATION DITCH
FARLEY CITY OF STP	MUNICIPAL	OXIDATION DITCH
HARTLEY CITY OF STP	MUNICIPAL	OXIDATION DITCH
DEWITT CITY OF STP	MUNICIPAL	OXIDATION DITCH
CUMMING CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
BALLTOWN, CITY OF-NORTH WWTF	MUNICIPAL	PRIMARY TREATMENT
BALLTOWN, CITY OF-SOUTH WWTF	MUNICIPAL	PRIMARY TREATMENT
BANKSTON CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
BAGLEY CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
RICKETTS CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
WELTON CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
EAGLE GROVE CITY OF STP	MUNICIPAL	RBC
WEBSTER CITY, CITY OF STP	MUNICIPAL	RBC
CENTERVILLE CITY OF STP (EAST)	MUNICIPAL	RBC
CENTERVILLE CITY OF STP (WEST)	MUNICIPAL	RBC
EMMETSBURG CITY OF STP	MUNICIPAL	RBC
SHELDON CITY OF STP	MUNICIPAL	RBC
IOWA GREAT LAKES SANITARY DISTRICT STP	MUNICIPAL	RBC
LAMONI CITY OF STP	MUNICIPAL	SBR
NORTH LIBERTY CITY OF STP	MUNICIPAL	SBR
OXFORD CITY OF STP	MUNICIPAL	SBR
HOPKINTON CITY OF STP	MUNICIPAL	SBR
ELDRIDGE CITY OF STP(SOUTH SLOPE)	MUNICIPAL	SBR
CLEAR LAKE SANITARY DISTRICT	MUNICIPAL	SBR
IRETON CITY OF STP	MUNICIPAL	TRICKLING FILTER
BRITT CITY OF STP	MUNICIPAL	TRICKLING FILTER
KIRON CITY OF STP	MUNICIPAL	TRICKLING FILTER
TIPTON CITY OF STP (WEST)	MUNICIPAL	TRICKLING FILTER
MADRID CITY OF STP	MUNICIPAL	TRICKLING FILTER
OGDEN CITY OF STP	MUNICIPAL	TRICKLING FILTER
ALTOONA CITY OF STP	MUNICIPAL	TRICKLING FILTER
KNOXVILLE CITY OF STP	MUNICIPAL	TRICKLING FILTER
OSCEOLA CITY OF STP	MUNICIPAL	TRICKLING FILTER
ADAIR CITY OF STP	MUNICIPAL	TRICKLING FILTER
SHENANDOAH CITY OF STP	MUNICIPAL	TRICKLING FILTER
SIOUX CENTER CITY OF STP	MUNICIPAL	TRICKLING FILTER
NORTH ENGLISH CITY OF STP	MUNICIPAL	TRICKLING FILTER
ALTA CITY OF STP	MUNICIPAL	TRICKLING FILTER
CASCADE CITY OF STP	MUNICIPAL	TRICKLING FILTER
STUART CITY OF STP	MUNICIPAL	TRICKLING FILTER
SLOAN CITY OF STP*	MUNICIPAL	TRICKLING FILTER
GOWRIE MUNICIPAL UTILITIES	MUNICIPAL	TRICKLING FILTER

LOHRVILLE CITY OF STP	MUNICIPAL	TRICKLING FILTER
NEWELL CITY OF STP	MUNICIPAL	TRICKLING FILTER
SCRANTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
ALBERT CITY,CITY OF STP	MUNICIPAL	TRICKLING FILTER
GRINNELL CITY OF STP	MUNICIPAL	TRICKLING FILTER
NEOLA CITY OF STP	MUNICIPAL	TRICKLING FILTER
CRESTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
HUXLEY CITY OF STP	MUNICIPAL	TRICKLING FILTER
OSKALOOSA CITY OF STP (NORTHEAST)	MUNICIPAL	TRICKLING FILTER
GREENFIELD CITY OF STP	MUNICIPAL	TRICKLING FILTER
HAWKEYE CITY OF STP	MUNICIPAL	TRICKLING FILTER
NEW HAMPTON CITY OF STP	MUNICIPAL	TRICKLING FILTER
POSTVILLE CITY OF STP	MUNICIPAL	TRICKLING FILTER
WAUKON CITY OF STP	MUNICIPAL	TRICKLING FILTER
FOUR OAKS GROUP HOME - BERTRAM CAMPUS	SEMI-PUBLIC	ACTIVATED SLUDGE
BENTON COMMERCE VILLAGE-STP	SEMI-PUBLIC	ACTIVATED SLUDGE
KNOXVILLE VA HOSPITAL	SEMI-PUBLIC	ACTIVATED SLUDGE
SOUTHDALE ADDITION	SEMI-PUBLIC	ACTIVATED SLUDGE
OAK HILLS SUBDIVISION-STP	SEMI-PUBLIC	ACTIVATED SLUDGE
SPRING GROVE MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
SOUTHPARK MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
BRECKENRIDGE ESTATES MOBILE HOMES	SEMI-PUBLIC	ACTIVATED SLUDGE
COMFORT INN AMANA COLONIES	SEMI-PUBLIC	ACTIVATED SLUDGE
IOWA CITY REGENCY MOBILE HOME PARK STP	SEMI-PUBLIC	ACTIVATED SLUDGE
LAKE RIDGE, INC.- STP	SEMI-PUBLIC	ACTIVATED SLUDGE
LAKEVIEW KNOLLS	SEMI-PUBLIC	ACTIVATED SLUDGE
MODERN MANOR MOBILE HOME COURT	SEMI-PUBLIC	ACTIVATED SLUDGE
WOODLAND MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
ANDREW JACKSON CARE FACILITY	SEMI-PUBLIC	ACTIVATED SLUDGE
CAMP COURAGEOUS OF IOWA	SEMI-PUBLIC	ACTIVATED SLUDGE
DES MOINES GOLF & COUNTRY CLUB	SEMI-PUBLIC	ACTIVATED SLUDGE
HICKORY ACRES SUBDIVISION	SEMI-PUBLIC	ACTIVATED SLUDGE
SUPER 20 MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
TABLE MOUND #1 MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
CAMP ABE LINCOLN	SEMI-PUBLIC	ACTIVATED SLUDGE
PAVELKA MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
WEST KIMBERLY MOBILE HOME PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
WEST LAKE PARK	SEMI-PUBLIC	ACTIVATED SLUDGE
LEE COUNTY CORRECTIONAL FACILITY	SEMI-PUBLIC	ACTIVATED SLUDGE
RISEN SON CHRISTIAN VILLAGE	SEMI-PUBLIC	ACTIVATED SLUDGE
TEEN CHALLENGE OF THE MIDLANDS-STP	SEMI-PUBLIC	ACTIVATED SLUDGE
IOWA DOT REST AREA #04-I80 TIPTON	SEMI-PUBLIC	AERATED LAGOON
TIMBER RIDGE MOBILE HOME PARK-STP	SEMI-PUBLIC	AERATED LAGOON
CAMP DODGE	SEMI-PUBLIC	AERATED LAGOON
DNR LEDGES STATE PARK	SEMI-PUBLIC	AERATED LAGOON
SUNNYBROOK MOBILE HOME PARK STP	SEMI-PUBLIC	AERATED LAGOON
DNR LAKE WAPELLO STATE PARK	SEMI-PUBLIC	AERATED LAGOON
ECHO VALLEY MOBILE HOME PARK NO. 2	SEMI-PUBLIC	AERATED LAGOON
ECHO VALLEY MOBILE HOME PARK NO.1	SEMI-PUBLIC	AERATED LAGOON
DNR LAKE OF THREE FIRES STATE PARK	SEMI-PUBLIC	AERATED LAGOON
AMANA COLONIES GOLF COURSE, INC.	SEMI-PUBLIC	AERATED LAGOON
AMANA NORDSTROM INC.	SEMI-PUBLIC	AERATED LAGOON
Bulk Petroleum	SEMI-PUBLIC	AERATED LAGOON
COLONY VILLAGE RESTAURANT	SEMI-PUBLIC	AERATED LAGOON
DAYS INN	SEMI-PUBLIC	AERATED LAGOON
FUEL MART 794	SEMI-PUBLIC	AERATED LAGOON
KWIK STAR #303	SEMI-PUBLIC	AERATED LAGOON
GATEWAY LTD-STP	SEMI-PUBLIC	AERATED LAGOON

SHILOH	SEMI-PUBLIC	AERATED LAGOON
SUNRISE MOBILE HOME VILLAGE	SEMI-PUBLIC	AERATED LAGOON
TIMBER TRAILS ESTATES HOMEOWNER'S ASSOCIATION	SEMI-PUBLIC	AERATED LAGOON
GRANADA GARDENS MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
DNR BACKBONE STATE PARK (LOWER AREA)	SEMI-PUBLIC	AERATED LAGOON
DALLAS COUNTY CARE FACILITY-STP	SEMI-PUBLIC	AERATED LAGOON
DNR SPRINGBROOK STATE PARK-EDUCATION CENTER	SEMI-PUBLIC	AERATED LAGOON
LAKEVIEW HEIGHTS	SEMI-PUBLIC	AERATED LAGOON
DUBUQUE REGIONAL AIRPORT	SEMI-PUBLIC	AERATED LAGOON
HIDDEN VALLEY ADDITION	SEMI-PUBLIC	AERATED LAGOON
HOMETOWN LAKESIDE MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
LAKEWOOD ESTATES MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
M AND W MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
CENTRAL LEE COMMUNITY SCHOOLS	SEMI-PUBLIC	AERATED LAGOON
WESTSIDE PARK FOR MOBILE HOMES	SEMI-PUBLIC	AERATED LAGOON
DNR VIKING LAKE STATE PARK	SEMI-PUBLIC	AERATED LAGOON
CUTTY'S DES MOINES CAMPING CLUB	SEMI-PUBLIC	AERATED LAGOON
CRESTVIEW MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
HARVESTER GOLF CLUB DEVELOPMENT	SEMI-PUBLIC	AERATED LAGOON
SUNRISE MOBILE HOME PARK	SEMI-PUBLIC	AERATED LAGOON
CARDINAL SCHOOL STP	SEMI-PUBLIC	AERATED LAGOON
TURKEY VALLEY COMMUNITY SCHOOL	SEMI-PUBLIC	AERATED LAGOON
DNR PIKES PEAK STATE PARK-STP	SEMI-PUBLIC	AERATED LAGOON
COUNTRY CONDOS-STP	SEMI-PUBLIC	OTHER
CAMP HANTESA STP (CAMP FIRE)	SEMI-PUBLIC	OTHER
JESTER PARK #2	SEMI-PUBLIC	OTHER
JESTER PARK #3-(NEW LODGE)	SEMI-PUBLIC	OTHER
YMCA CAMP OF BOONE	SEMI-PUBLIC	OTHER
IOWA ASSOCIATION OF MUNICIPAL UTILITIES	SEMI-PUBLIC	OTHER
NEAL SMITH NATIONAL WILDLIFE REFUGE	SEMI-PUBLIC	OTHER
CENTER VILLAGE CARE FACILITY-STP	SEMI-PUBLIC	OTHER
HARMONY COMMUNITY SCHOOL	SEMI-PUBLIC	OTHER
WOODLANDS TREATMENT CENTER	SEMI-PUBLIC	OTHER
GOLD KEY DINING ROOM & LOUNGE	SEMI-PUBLIC	OTHER
GOLD KEY MOTEL	SEMI-PUBLIC	OTHER
JOLLY ROGER CAMPGROUND & MARINA	SEMI-PUBLIC	OTHER
PILGRIM HEIGHTS RETREAT CENTER-STP	SEMI-PUBLIC	OTHER
AINSWORTH CORNERS,INC.-STP-TRUCK STOP	SEMI-PUBLIC	OTHER
THE MEADOWS OF DUBUQUE,INC. GOLF COURSE STP	SEMI-PUBLIC	OTHER
ALBRECHT ACRES CAMPGROUND-STP	SEMI-PUBLIC	OTHER
DNR BACKBONE STATE PARK (CABINS & SPILLWAY)	SEMI-PUBLIC	OTHER
DNR BACKBONE STATE PARK (RANGER'S RESIDENCE)	SEMI-PUBLIC	OTHER
DNR SPRINGBROOK STATE PARK-CAMPGROUND AREA	SEMI-PUBLIC	OTHER
DIAMOND EAGLE VILLAGE-STP	SEMI-PUBLIC	OTHER
CLEARVIEW MOBILE HOME PARK-RIPLEY'S INC.	SEMI-PUBLIC	OTHER
HIDDEN OAKS ESTATES SUBDIVISION-STP	SEMI-PUBLIC	OTHER
BELVA DEER PARK	SEMI-PUBLIC	OTHER
TRI-COUNTY COMMUNITY SCHOOL	SEMI-PUBLIC	OTHER
HICKORY GROVE MOBILE HOME PARK	SEMI-PUBLIC	OTHER
LYNNDANA ACRES SANITARY SEWER DISTRICT	SEMI-PUBLIC	OTHER
BOOKS ARE FUN, LTD.	SEMI-PUBLIC	OTHER
YARMOUTH COMMUNITY BUILDING	SEMI-PUBLIC	OTHER
WATER'S EDGE SUBDIVISION-WWTF	SEMI-PUBLIC	OTHER
JESTER PARK #1	SEMI-PUBLIC	PRIMARY TREATMENT
COCKLIN'S RV CAMPSITE	SEMI-PUBLIC	PRIMARY TREATMENT
EAST IOWA BIBLE CAMP-STP	SEMI-PUBLIC	PRIMARY TREATMENT
ROCK VALLEY RESIDENTIAL/HOPE HAVEN, INC.	SEMI-PUBLIC	PRIMARY TREATMENT
COUNTRY AIRE TRAILER COURT-STP	SEMI-PUBLIC	Septic Tank Sand Filter

SLEEP INN	SEMI-PUBLIC	Septic Tank Sand Filter
BROOKLYN SHORTSTOP TRAVEL CENTER	SEMI-PUBLIC	Septic Tank Sand Filter
MAHARISHI RESORT COMMUNITY	SEMI-PUBLIC	SBR
CONO CHRISTIAN SCHOOL	SEMI-PUBLIC	SBR
WOODWARD RESOURCE CENTER	SEMI-PUBLIC	TRICKLING FILTER
ADAIR-CASEY COMMUNITY SCHOOL DISTRICT	SEMI-PUBLIC	TRICKLING FILTER
COTTAGE RESERVE CORPORATION	SEMI-PUBLIC	TRICKLING FILTER
HIGHLAND COMMUNITY SCHOOL	SEMI-PUBLIC	TRICKLING FILTER
NORTHEND MOBILE HOME PARK	SEMI-PUBLIC	TRICKLING FILTER
KNAPP MOBILE HOME PARK-STP	SEMI-PUBLIC	TRICKLING FILTER
SPRING VALLEY MOBILE PARK	SEMI-PUBLIC	TRICKLING FILTER
VALLEY HILL TRAILER PARK (TY CO., INC.)	SEMI-PUBLIC	TRICKLING FILTER

	Lower Cost Scenario			**Higher Cost Scenario**		
	Capital Cost of Construction	**O & M Cost Present Worth**	**20-year Annual Cost**	**Capital Cost of Construction**	**O & M Cost Present Worth**	**20-year Annual Cost**
	$252,433,000	**$342,172,000**	**$39,962,000**	**$374,411,000**	**$342,172,000**	**$51,189,000**
Overall Cost			**$594,605,000**			**$716,583,000**

Disinfection Costs: For each of the 334 facilities, the proposed rule change would require each facility to meet effluent bacteria levels equal to the Water Quality Standard's numerical bacteria criteria. As specified in existing rule, all bacteria criteria are end-of pipe limits with no provision for mixing with critical low stream flows. It is assumed that the existing wastewater treatment or even after operation of nitrification unit processes would not comply with the stringent bacteria criteria without additional treatment. Thus, each facility would need to install effluent disinfection equipment. Since the most widely used treatment technique for disinfection is chlorination, the economic estimates are based on the construction and O&M costs for chlorination equipment. While chlorine is a very effective disinfection agent, it is also a very toxic residual to the receiving stream's aquatic life. Therefore, dechlorination equipment costs were included in the cost estimates. The overall disinfection costs has been generalized to uniformly cost $150,000 per facility. Table 3 notes the projected disinfection related costs for all 334 facilities.

Other alternative disinfection treatment options are available to wastewater treatment facilities. However, their costs are traditionally greater than chlorination and dechlorination. Each facility's managing authority will need to select the type of unit process, with cost being one of the factors. There are no higher cost or lower cost options for disinfection equipment. However, as noted in the attached addendum, disinfection costs may not be applicable for some types of implementation alternatives (such as land application) that do not discharge to a receiving stream. The appropriateness and applicability of these alterative options are best left to the facility's managing authority and are not integrated into any of the economic estimates.

Table 3 – Topic 4 Disinfection Fiscal Impacts

334 facilities * $150,000 for disinfection costs per facility = $50,100,000	
Overall Cost =	**$50,100,000**

C. Anticipated Benefits:

The anticipated benefits from the adoption of the Topic 4 provisions are also associated with the potential improvements to: instream conditions for aquatic and semiaquatic life, wildlife, and

livestock watering needs, and aesthetic conditions. These potential benefits do not have readily identifiable monetary value and are not estimated in this impact statement.

Topic 5 – Recreational Use for All non-Class A1 Designated Waters: This topic is proposing to add the Class A1 – Primary Contact Recreational Use designation to all streams not protected for Class A1 recreational uses including all current Class B(LR) waters having no recreational use designation and stream reaches currently designated as a Class A2 under the April 2004 rule change. Statewide, 14 additional wastewater treatment facilities (10 municipal, 4 semi-public) discharging to Class B(LR) waters are anticipated to be impacted through the implementation of more stringent effluent bacteria limits requiring disinfection. Several industrial facilities may be impacted by this topic, but were not included at this time. The same cost estimates and equipment needs discussed for Topic 4 were used for Topic 5 facilities. Table 4 notes the projected construction and O& M costs for the 14 impacted facilities.

1. municipal wastewater treatment facilities discharging directly to streams segments with an assigned protected flow,
2. industrial wastewater treatment facilities discharging directly to streams segments with an assigned protected flow, and
3. semi-public wastewater treatment facilities discharging directly to streams segments with an assigned protected flow.

In addition, the 63 wastewater treatment facilities (54 municipal, 6 semi-public, 3 industrial) from Topic 3 that are anticipated to be impacted through the implementation of more stringent effluent ammonia-nitrogen limits may also be impacted by the implementation of more bacteria limits due to the proposed provisions adding Class A1 to all Class B(LR) streams (Topic 5) as streams segments that possess an applicable protected flow are Class B(LR) streams. The disinfection/dechlorination costs are included in Topic 5 summary impacts below.

Approximately 69 facilities were identified in the April 2004 rulemaking effort as being potentially impacted by the Class A2 designation. The same economic impact established in 2004 will apply to the proposed Class A1 designation of these stream reaches because the same wastewater treatment requirements would be required. Therefore, no additional economic impact is projected from this proposed rule on the 69 facilities.

Table 4 – Topic 5 Disinfection Fiscal Impacts

APLINGTON CITY OF STP	MUNICIPAL	AERATED LAGOON
BOYDEN CITY OF STP	MUNICIPAL	AERATED LAGOON
DNR BEEDS LAKE STATE PARK	SEMI-PUBLIC	AERATED LAGOON
GLADBROOK CITY OF STP	MUNICIPAL	AERATED LAGOON
LAKE VIEW CITY OF STP	MUNICIPAL	TRICKLING FILTER
LEMARS CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
MARATHON CITY OF STP	MUNICIPAL	PRIMARY TREATMENT
PANAMA CITY OF STP	MUNICIPAL	OTHER
REINBECK CITY OF STP	MUNICIPAL	ACTIVATED SLUDGE
ROCKWELL CITY, CITY OF STP	MUNICIPAL	TRICKLING FILTER
TIMBER VALLEY ESTATES-MHC-STP	SEMI-PUBLIC	AERATED LAGOON
UNDERWOOD CITY OF STP	MUNICIPAL	AERATED LAGOON
VERNON HEIGHTS MOBILE HOME PARK	SEMI-PUBLIC	OTHER
WILLOW POINTE ASSISTED LIVING FACILITY	SEMI-PUBLIC	ACTIVATED SLUDGE
14 facilities + 63 facilities = 77 facilities * $150,000 for disinfection costs per facility = $11,550,000		
	Overall Cost =	**$11,550,000**

Assumptions and Basic Approach for Cost Estimates: The wastewater treatment costs were estimated using several methods. The capital cost of construction was estimated using a cost curve based on recent information available for wastewater treatment plant upgrades in Iowa from the Department's wastewater construction section. The cost curve includes facilities that have recently performed a major upgrade through the State Revolving Fund (SRF) loan program. These facilities were typically lagoon-type systems that constructed extended aeration activated sludge facilities in order to meet stringent ammonia-nitrogen effluent limitations. Once the cost curve was developed, an estimated treatment cost was calculated using the average wet weather (AWW) flows of each potentially impacted facility and the cost curve. It should be noted that some of these estimates for individual dischargers may project higher or lower costs because of the lack of data to derive the cost curve for extremely large and extremely small design flows. However, it is anticipated that the overall costs are adequately representative.

The operation & maintenance (O&M) costs were estimated using the EPA's Innovative and Alternative Technology Assessment Manual (published in 1980 using cost information from 1976). The O&M cost used facilities that were upgrading from an aerated lagoon to an extended air activated sludge plant. A Consumer Price Index of 3.32 from the U.S. Department of Labor was used to bring the 1976 EPA cost estimates to today's cost. The current cost of operating an aerated lagoon was subtracted from the cost of operating an extended air activated sludge plant to determine a representative O&M cost increase. The resulting net difference of O&M cost was calculated to a present worth value by using a 3% interest rate to account for inflation and a 20-year wastewater treatment plant design life. The present worth for O&M was then plotted with AWW design flows to create a cost regression where the resulting formula was used to estimate O&M present worth for the impacted facilities. The capital cost and O&M cost were then calculated to an annual cost to estimate impact on a year-by-year basis using a capital recovery equation.

Summary: The projected fiscal impact to municipal, industrial and semipublic wastewater treatment facilities from this rule-making effort ranges from $790 million to $956 million. The following table summarizes the total impact from each topic of the proposed rule.

Table 6
Fiscal Impact Summary

Rule-making Topic	Number of Affected Facilities	Projected Fiscal Impact		
		Nitrification	Disinfection/ Dechlorination	Total
Higher Cost Scenario				
1) General Use Definition Changes*	*	*	*	*
2) Class B(WW-1, 2, & 3) Modification	N/A	N/A	N/A	N/A
3) Protected Flow	63**	**$177,946,000**	N/A	**$177,946,000**
4) Rebuttable Presumption*	334	**$716,583,000**	**$50,100,000**	**$766,683,000**
5) Add Class A-1 to all Class B(LR)	14 + 63**	N/A	**$11,550,000**	**$11,550,000**
Totals	**411**	**$894,529,000**	**$61,650,000**	**$955,879,000**
Lower Cost Scenario				
1) General Use Definition Changes*	*	*	*	*
2) Class B(WW-1, 2, & 3) Modification	N/A	N/A	N/A	N/A
3) Protected Flow	36***	**$134,011,000**	**N/A**	**$134,011,000**
4) Rebuttable Presumption*	246	**$594,605,000**	**$50,100,000**	**$644,705,000**
5) Add Class A-1 to all Class B(LR)	14 + 63***	**N/A**	**$11,550,000**	**$11,550,000**
Totals	**323**	**$728,616,000**	**$61,650,000**	**$790,266,000**
	Range	**$790,266,000 to $955,879,000**		

* Impacts of Topic 1 are included in Topic 4.
** Same facilities, but having separate costs due to different topics.
***36 facilities are part of the 63. Less facilities are affected by nitrification in the lower cost scenario. However, all 63 are still impacted by disinfection in the lower cost scenario.

Anticipated Implementation Approach: The Department clearly recognizes that the implementation of these proposed rules and rule changes will have far-reaching economic impacts. Historically, compliance with the provisions of the federal Clean Water Act has carried a significant price tag and will continue to be costly as requirements and guidelines are reaffirmed. It is the goal of the Department to implement these proposed rules in a reasonable, practicable, and responsible manner. Thus, the implementation will be linked to the reissuance of each facility's NPDES permit. All available NPDES provisions and consideration will be made to allow adequate time for each facility to comply with the adopted rules according to their time constraints, economic abilities, and source of financial aid. The State Revolving Fund (state administered low-interest loan program) will be available to assist in the eligible construction of the required facilities. If needed, additional fund monies will be sought to assure adequate loan funding.

The Department will be performing field assessments and, if applicable, preparing Use Attainability Analysis (UAA) reports on any waterbody suspected of not being capable of attaining any of the presumptive designations (Topics 4 & 5, above). These assessments will be linked to the reissuance of NPDES Permits to impacted facilities and may require the Department to assign over 1.5 FTE annually for the next 5 - 7 years to perform field assessment and prepare UAA documents

($75,000, annually). Field equipment associated with assessment and UAA report should be less than $3,000, annually. Additional discussion of the implementation and UAA report efforts is in the rule-referenced document – Warm Water Stream Use Assessment and Attainability Analysis Protocol, which is part of this rule change. No other state agencies are anticipated to be affected by this rule-making effort.

Commonly Used Terms

$1Q_{10}$ – A projected low stream flow regime or condition used in several provisions of the Water Quality Standards. It is the calculated lowest one-day stream flow that would occur once every ten-years at a given location on a stream.

$7Q_{10}$ – A projected low stream flow regime used in several provisions of the Water Quality Standards. It is the calculated lowest seven-day average stream flow that would occur once every ten-years at a given location on a stream.

$30Q_{10}$ – A projected low stream flow regime or condition used in several provisions of the Water Quality Standards. It is the calculated lowest thirty-day average stream flow that would occur once every ten-years at a given location on a stream.

State Revolving Fund – A state administered low-interest loan program that makes funds available to assist in the construction of various water quality improvements, particularly for publicly-owned wastewater treatment facilities.

Nitrification – The technical term applied to the biological treatment of wastewater in which ammonia nitrogen (and associated compounds) are transformed into less toxic forms, such as nitrate.

Rebuttable Presumption – A term used to describe the interpretation of the "fishable and swimmable" goals of the Clean Water Act where all waters are assumed capable of supporting these goals unless otherwise proven not to be capable of supporting these uses.

NPDES permit – The federal National Pollutant Discharge Elimination System permit issued by the state traditionally to point sources of treated wastewater.

Addendum

Implementation Alternatives Potentially Available to Affected Facilities

This addendum briefly discusses several implementation alternatives that may be considered by wastewater treatment facilities impacted by this rule making effort. The objective is to note several of the potentially lesser-cost nitrification approaches (or approaches to comply with stringent effluent ammonia limits) that may be available to facilities, but specific economic consideration of these alternatives could not be included in the Fiscal Impact Statement. None of these alternatives has universal application to all impacted facilities and each alternative should be assessed by the managing authority on an individual basis.

With past Water Quality Standards (WQS) rule making efforts and the adopted rules, several alternatives have developed to allow affected entities additional time, reduced construction costs, and operational flexibility when the rules are implemented. Some of these alternatives have been integrated into the rules, such as the stepped mixing zones percentages for ammonia, site-specific data collection, and the use of an instream effluent diffuser. While these alternatives are still within rule, some may not be as applicable because most of the facilities potentially affected by this rule making effort will be discharging to stream segments with very low or no flow. Thus, the water quality-based effluent limits will be equal to or nearly equal to the numerical WQS criteria. To potentially reduce some of the economic burden of meeting end-of-pipe limits equal to the WQS criteria (particularly for ammonia nitrogen), the following may be considered.

Potentially Lower Cost Treatment Techniques:

1. Land Application. One of the treatment alternatives to a mechanical nitrification facility is land application of the wastewater after pretreatment. The pretreated wastewater is typically applied by gravity flow to vegetated soils that are slow to moderate in permeability and is treated as it travels through the soil matrix by filtration adsorption, ion exchange, microbial action and by plant uptake.

   The land application treatment technique generally requires a sizeable land area for both the wastewater application site and the required storage during non-application periods. Thus, it probably can only be pragmatically used by very small communities or wastewater sources. It is anticipated that only facilities with relatively low design flow (<0.1 mgd) would find sufficient land (25 –35 acres) in close proximity. In addition to land constraints, there are a number of other factors that need to be evaluated as a community considers using the land application option. Some of the major factors are listed below:

- Hydraulic Application Rate.
- BOD5 loading rate.
- Soil permeability.
- Nitrogen loading.
- Phosphorus loading.
- Trace Elements loading.
- Salinity Restrictions.
- Groundwater table.
- Crop and vegetation selection.

For the development of these discussions on the cost comparison between land application and an extended aeration activated sludge facility, the following assumptions were made:

- Treatment facility design flow of 0.1 mgd.

- BOD_5 loading rate of 2 lbs/acre/day was used for calculations.
- Pretreatment lagoon cells and pretreated wastewater storage cells are required to hold the wastewater for 180 days (which includes retention time in the pretreatment cells)
- Operational cost for land treatment equals the operational cost of an aerated lagoon.
- The difference of 20 years of annual operational cost between a mechanical facility and an aerated lagoon was converted back to present worth at a rate of 3%.
- Constructions cost curves from EPA "Innovative and Alternative Technology Assessment Manual" were updated to bring published costs to current dollars.
- No salvage value has been included for either the land application technique or the mechanical nitrification option.

Working with the above-mentioned assumptions and constraints, it was estimated that a facility with an average flow of 0.1 mgd could expect an annual saving of between 18% – 25% in selecting the Land Application option as compared to constructing and operating an extended aeration mechanical nitrification facility. Clearly, many factors specific to the facility influence the actual cost comparison between the two treatment techniques for a given facility. Thus, the economic evaluation of treatment techniques for a facility is best prepared by the retained consulting engineer.

2. Aerated Lagoon Covers. A newer innovative modification to the traditional aerated lagoon wastewater treatment technique is the incorporation of a membrane cover over several of the aerated lagoon cells followed by polishing reactors for nitrification. The membrane cover allows the lagoon water to retain more of the latent heat associated with domestic wastewater that provides for accelerated decomposition of the organic and ammonia components of domestic wastewater and the polishing reactors nitrify in a low BOD environment. While the Department does not endorse any particular type of wastewater technique, this approach to improve wastewater treatabilty has been permitted for several facilities in Iowa. From a well-operated and maintained system, the effluent quality does appear to achieve ammonia reduction capable of meeting the projected end of pipe ammonia nitrogen limits discussed above.

3. Combined Aerated Lagoon/Activated Sludge Unit Processes. A newer innovative modification to the traditional aerated lagoon wastewater treatment technique is the incorporation of an activated sludge unit process into the basic physical features of the lagoon system. The proprietary process (commonly called a Bio-Lac system) converts part of the aerated lagoon cells into cells capable of supporting a high biomass of activated sludge which provides for accelerated decomposition of the organic and ammonia components of domestic wastewater. While the Department does not endorse any particular type of wastewater technique, this approach to improve wastewater treatability has been permitted for several facilities in Iowa. From a well-operated system, the effluent quality does appear to achieve ammonia reduction capable of meeting the projected end of pipe ammonia nitrogen limits noted above. Noted below are some of the observations for the facilities permitted in Iowa:

- All of the lagoons that have been modified are above 1 mgd.
- The facilities are relatively new and are producing effluent that is low in ammonia under current loadings. Their long term performance and reliability is yet to be established as they approach their design conditions.
- Three out of four of these facilities are located in the central Iowa.
- Preliminary estimates suggest that communities that can take advantage of such technology may save between 20% - 40% compared to building a new extended air facility.

4. Other Innovative Treatment Techniques. The science of wastewater treatment continues to develop newer approaches and design concepts, such as artificial wetlands and various applications of

bioremediation. Some of these concepts may have economic benefits or may be used in concert with established treatment techniques to achieve ammonia reduction capable of meeting the projected end of pipe ammonia nitrogen limits discussed above.

Potentially Lower Cost Operation/Treatment Technique:

1) Flow variable effluent limits. The basic principle of this concept would allow a discharger to release only the amount of a pollutant that the receiving stream can assimilate and not violate the WQS. As the assimilative capacity of the receiving stream increased due to increased natural flow, additional amounts could be discharged, normally from stored pre-treated wastewater. Careful operation of the discharge flow rate, monitoring of effluent ammonia concentrations, and measurement of the receiving stream's upstream flow are critical. The facility's discharge permit would be modified to reflect the additional operational requirements to assure that the instream criteria are not violated. This concept is typically considered by wastewater treatment facilities where ammonia nitrogen is present in their treated effluent. Several facilities treating industrial and domestic wastewater operate under this technique.

   One significant benefit for a discharger, particularly one with ammonia present, is that there is no need to construct and operate an advanced wastewater treatment facility designed to remove essentially all ammonia-nitrogen (called nitrification). Secondary treated wastewater (for POTWs) could be partially stored in holding cells and/or land applied when inadequate assimilative capacity in the receiving stream is available. The need for additional storage cells and/or land application equipment and the means to measure stream flows are additional expenses associated with this concept.

   It is anticipated that this treatment technique may have greater economic appeal for dischargers with relatively small to mid size (less than 100,000 gallon/day) design flows. Land requirements for treated effluent storage during lower stream flow periods may be excessively large for larger facilities. The large land requirements are due in part to the type of receiving streams associated with this rulemaking effort, low to zero flow headwater reaches. Thus, the treatment design associated with the flow variable concept may require greater than 180 days of storage before adequate stream flows occur to assimilate all of the stored wastewater. Specific costs for individual facilities or unit costs for this technique could not be prepared for this impact statement since each facilities costs would be specific to numerous local factors.

   Clearly, this treatment technique is not applicable to all facilities and would require careful evaluation before pursued. Contact is encouraged with the Department's NPDES permit Section or Water Resources Section staff when considering this option.

Appendix A

1. See Affected Facilities Spreadsheets Attachment

2. US EPA. February 1980. Innovative and Alternative Technology Assessment Manual. Office of Water, Program Operations, Washington, DC.

3. DNR State Revolving Loan Wastewater Files